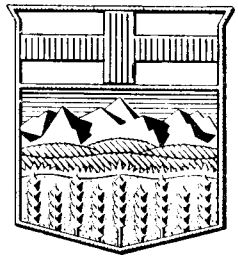


an analysis of ALBERTA Oil Industry

By J. L. IRWIN

Published by the Department of Trade and Industry
HON. C. E. GERHART, Minister W. D. KING, Deputy Minister
EDMONTON, ALBERTA, CANADA

ALBERTA OIL REVIEW FOR 1944

By

J. L. IRWIN *

Alberta oil production for the calendar year 1944 totalled 8,788,726 barrels, a decrease of 885,822 barrels in comparison with the 1943 total. Production from fields outside of Turner Valley, with a total of 462,412 barrels, showed, however, an increase exceeding 100 per cent.

Tables giving details of production totals covering the last two years follow.

ALBERTA OIL PRODUCTION

(Quantities in Barrels)

	1943	1944	CHANGES	DAILY AVERAGE 1943	DAILY AVERAGE 1944
January	840,613	764,913	– 75,700	27,116	24,674
February	757,158	707,882	– 49,276	27,041	24,409
March	829,684	758,004	– 71,680	26,764	24,451
April	803,583	717,452	– 86,131	26,786	23,915
May	843,431	738,817	– 104,614	27,207	23,833
June	793,022	700,045	– 92,977	26,435	23,335
July	816,776	730,184	– 86,592	26,348	23,554
August	826,191	750,144	– 76,047	26,651	24,192
September	798,211	718,401	– 79,810	26,607	23,946
October	822,197	736,073	– 86,124	26,522	23,744
November	776,126	720,399	– 55,727	25,871	24,012
December	767,556	746,412	– 21,144	24,760	24,179
	9,674,548	8,788,726	– 885,822	26,509	24,020

OIL PRODUCTION FROM ALBERTA FIELDS OUTSIDE TURNER VALLEY

(Quantities in Barrels)

	1943	1944	CHANGES
Vermilion	93,258	234,603	+141,345
Taber	88,735	148,638	+ 59,903
Wainwright	18,136	17,154	– 982
Red Coulee	8,928	3,835	– 5,093
Princess	340	13,815	+ 13,475
Tilley	5,065	3,137	– 1,928
Dina	200	.....	– 200
Del Bonita	1,882	9,366	+ 7,484
Lloydminster	2,640	6,296	+ 3,656
Moose Dome	2,205	628	– 1,577
Armelgra	462	.....	– 462
Ram River	.....	207	+ 207
Conrad	.....	24,733	+ 24,733
TOTALS	221,851	462,412	+240,561

* Supervisor of Publications, Publicity Bureau

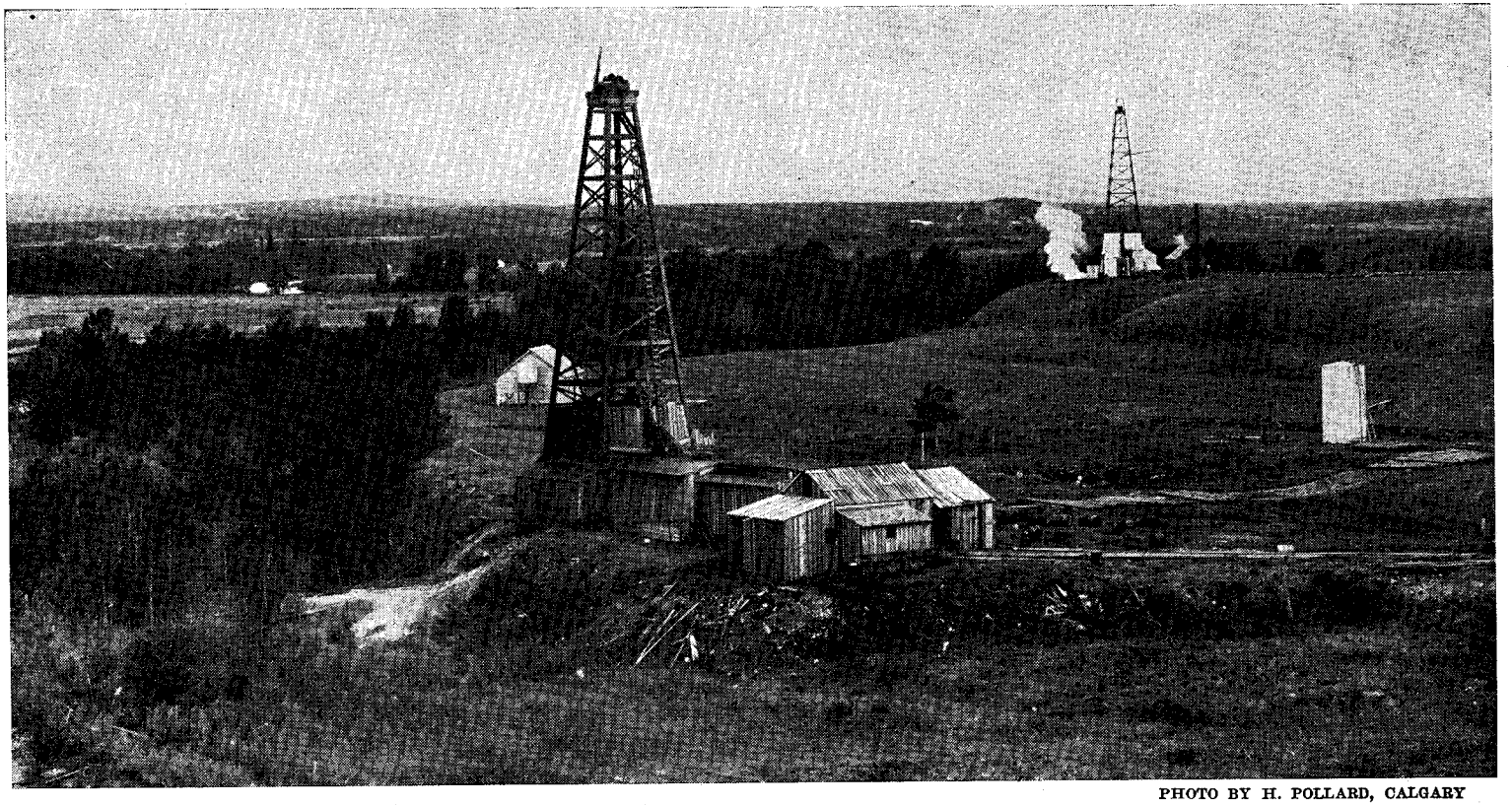


PHOTO BY H. POLLARD, CALGARY

The Turner Valley field in 1914 which proudly announced the possession of two wells producing from the shallow horizon above the limestone

ANNUAL PRODUCTION

(Quantities in Barrels)

1914–21	56,675
1922	15,796
1923	10,003
1924	17,749
1925	180,885
1926	219,598
1927	332,312
1928	489,532
1929	999,523
1930	1,436,259
1931	1,454,816
1932	918,154
1933	1,012,784
1934	1,266,049
1935	1,263,968
1936	1,320,428
1937	2,796,874
1938	6,743,101
1939	7,593,492
1940	8,495,207
1941	9,908,643
1942	10,136,296
1943	9,674,548
1944	8,788,726
TOTAL	75,131,418

NOTE:—The above is a revised production table, in comparison with those published in the years prior to 1943. Revisions in yearly totals, made necessary by the receipt of additional data, include for 1942 a deduction of 6,974 barrels for storage loss at Vermilion.

The first decline in Alberta's oil production over a long period of years appeared in 1943, following the peak year of 1942, when the annual total rose to 10,136,296 barrels. The decline, resulting from Turner Valley's decreasing production, continued in 1944. Offsetting this decrease is the advance made in production from fields outside of Turner Valley, which increased their production in 1944 by more than 100 per cent.

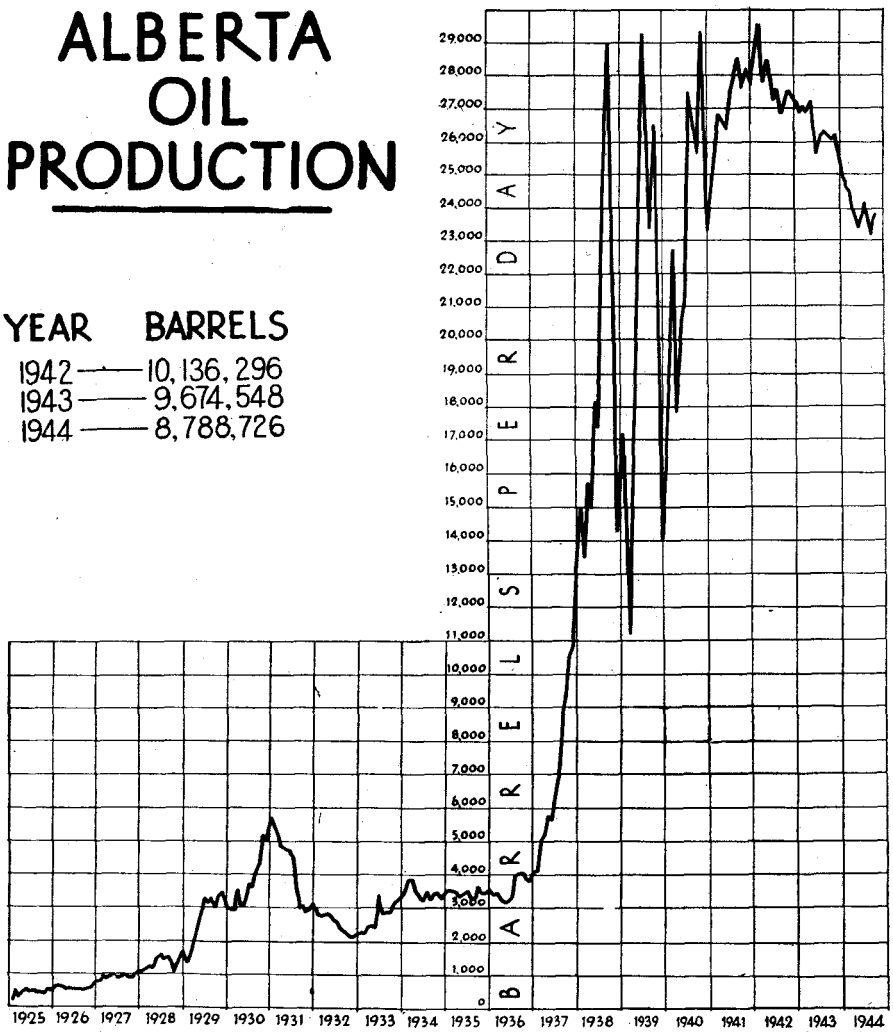
TURNER VALLEY

No particular apology should be required of Turner Valley for the present decline in oil. This field has had a long and successful history. Coming into productive operation in 1914, the grand total in production by the close of last year reached 73,707,960 barrels. This is Turner Valley's contribution over a period of thirty years. In comparing this figure with the grand total for the province over this time, which is 75,131,418 barrels, it will be agreed that the Valley's percentage of the whole is an impressive one. Approximately 80 per cent of this total came from crude oil recoveries from the limestone.

June 16, 1936, the date on which Turner Valley Royalties No. 1 well came into production with crude oil from the lime on a commercial basis, was a red letter day in Alberta's oil history. This discovery well was quickly followed by others, and by 1939 the Valley placed Canada in the position of second largest oil producing country in the British Empire.

ALBERTA OIL PRODUCTION

YEAR	BARRELS
1942	10,136,296
1943	9,674,548
1944	8,788,726



Thirty years is a respectable age for an oil field, added to which the Valley is by no means nearing a finish as yet. In 1944 the centre of the field on the west flank came back into new life, contributing to production totals, and major producers continued in the northern end. No marker is established as yet for the north of the field, and a new and additional area may be opened up there as a result of the performance of the Home 16 and 18 wells. The field, approximately twenty miles in length and a mile in breadth, forming an arc from north-west to south-west, will unquestionably make contributions to the Alberta totals for many years to come, and will finally close with a grand productive total, unpredictable at present, that will place the Turner Valley field in a premier position amongst the historical records of oil development throughout the world.

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

The places of Messrs. G. W. Northfield, Deputy Chairman and M. D. Kemp, Member—who resigned from the Petroleum and Natural Gas Conservation Board early in the year to assume other activities—have been taken by Mr. A. G. Bailey, Deputy Chairman, and Mr. D. P. Goodall, Member. Mr. Bailey was formerly with the Allied War Supplies. Mr. Goodall has been associated with the Board for a long time. Dr. E. H. Boomer still continues as Chairman.

CONSERVATION OF NATURAL GAS

An extension to the present method of petroleum and natural gas conservation is now to take place in Turner Valley, with a view to preventing more effectively the dissipation of surplus gas, which results so disastrously in a steady decline of pressure.

The work, which has been under way for many months in Turner Valley, and which is now completed, was carried out by the British American Oil Company and the Madison Natural Gas Company, under orders from the Natural Gas Utilities Board, the content of the orders being based in principle upon the report on conservation by Mr. Weymouth, an eminent gas engineer in the United States, made to the Petroleum and Natural Gas Conservation Board in 1943.

The extension will deal with subsidiary and main compressing stations to which gas will be directed, and sent from there either back into the Valley gas cap or to the Bow Island field. There will be seven wells through which the repressuring is to be conducted in Turner Valley, three for the south gas cap and four for the north.

The new conservation method offers a solution to the problem of increased viscosity, caused by the continuous escape of gas, which adds to the weight of oil in the structure. All of this must lead to losses in ultimate recovery, due to increased weight of the product, coupled with decreased pressure. By repressuring the gas cap a good deal of this may be avoided. The fuel question will also be remedied by this added conservation, giving to the field an estimated sixty per cent of additional life as a natural gas producer for heat and fuel.

ALBERTA PETROLEUM ASSOCIATION

The death of Mr. B. L. Thorne, President of the Alberta Petroleum Association, took place on March 23, 1944. Mr. Thorne's death was a severe blow to the oil and mining industry. Amongst former positions which he had held were those of president of the Canadian Institute of Mining and Metallurgy and mining engineer at Calgary to the Canadian Pacific Railway, Department of Natural Resources. His place as president of the Alberta Petroleum Association at Calgary is now held by Mr. F. M. Graham, former vice-president of the Association and director of McDougall Segur.

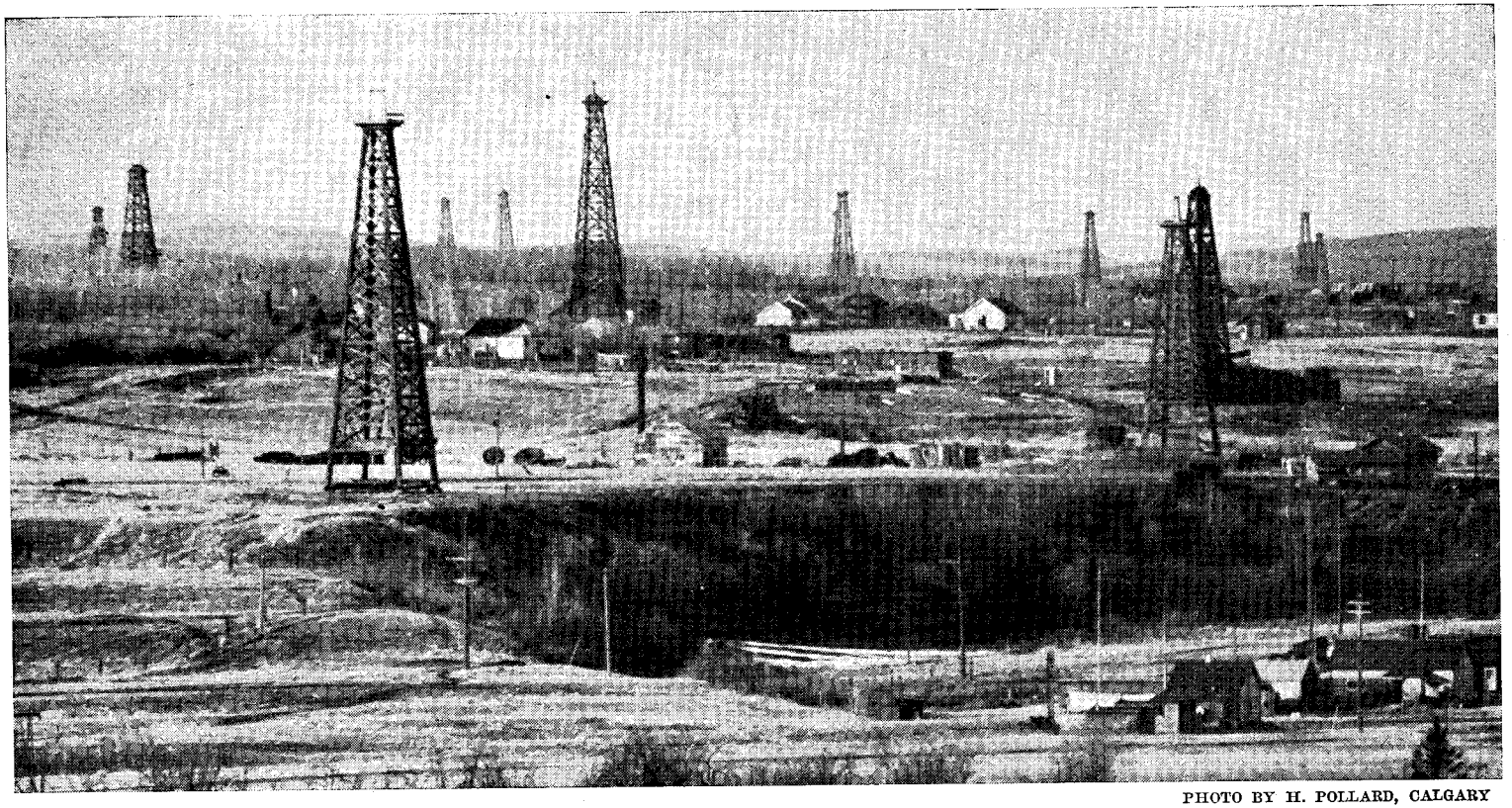


PHOTO BY H. POLLARD, CALGARY

A section of Turner Valley in 1944. By December 31st, 1944 the field contained a total of 275 producing wells

FIELDS OUTSIDE OF TURNER VALLEY

Eleven producing oil fields in Alberta, outside of Turner Valley, are recorded for 1944. Their production total for the year is a little better than 5½ per cent of Turner Valley's. Not so very long ago it was only a small fraction of one per cent. The productive total of these fields in 1944 showed more than a 100 per cent advance over their 1943 figure. From present performace, and indications, an even larger increase is quite easily possible for 1945.

JUMPING POUND FIELD

The biggest Alberta Oil news of the year is the introduction of the Jumping Pound field, 20 miles west of Calgary and 20 miles north of the northern producing wells of Turner Valley.

The discovery well, Shell No. 4–24–J, came into action in December, too late for production records for 1944. It was drilled by the Shell Oil Company.

The limestone was struck at 9,618 feet, and a porous zone from 9,636 to 9,860 was encountered. Further drilling made contact with the black lime indicating only a single porous zone, instead of a double as in Turner Valley. The Jumping Pound porous zone is stated to be similar to Turner Valley's lower one, and it is thought that they may be the same with Turner Valley's upper zone pinched off at Jumping Pound.

After the application of acid on three occasions, 500 gallons, then 1,000 and then 2,000, the drilling mud began to separate from the formation. A final acid test of 5,000 gallons, making a total of 8,500 gallons, was given on December 29th, following which the well was placed on experimental flow tests with various back pressures through the 3-inch tubing. It appears that the maximum open flow will be sixteen to seventeen million cubic feet. With increased back pressure there is a decreasing gas/oil ratio. A test on January 5th produced 93 barrels of oil, with gravity around 48° A.P.I.

The general hope is for the introduction of a second Turner Valley by the discovery of this field, so close to that famous producing area. The strike has received wide publicity, both in and out of Alberta, and intensive drilling activity in this immediate locality is expected to start at once.

VERMILION AND LLOYDMINSTER

The more prominent of these two fields, as to production totals so far, is Vermilion, 120 miles east of Edmonton. The Conservation Board reported 45 producing wells in December, 1944, which averaged a depth of around 1,900 feet, with gravity in the neighbourhood of 14°. In the majority of cases production is secured by pumping.

The product is used as a fuel supply for the railways. A cleaning plant employing the PETRECO electrical method eliminates water, after which a pipe line to the railway siding carries the oil to tank cars, which are taken to a railway divisional point for usage as fuel.

Portable rotary drills are used mostly for drilling, and average drilling is a matter of only a few days. Pumping of wells is carried out by three systems, which are (1) gas engines using gas from each individual well for

PHOTO BY DON COLTMAN

Laboratory. Examination of rock cuttings from rotary drill

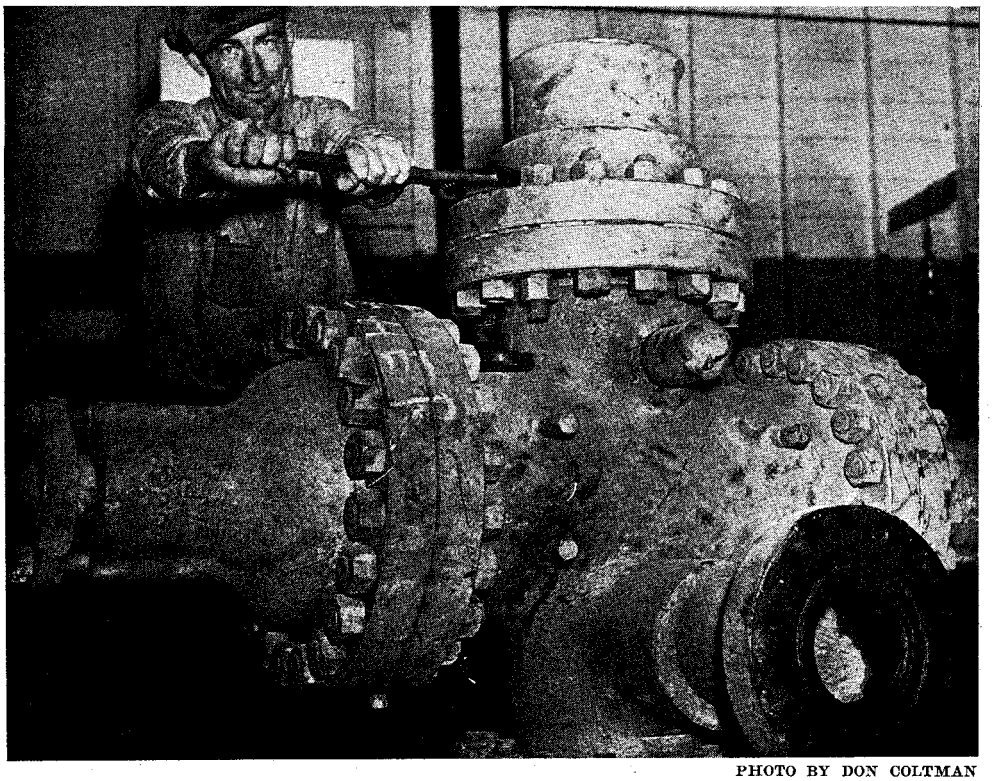


PHOTO BY DON COLTMAN

Blowout preventer. For use while drilling with rotary tools. Rams can be closed on drill pipe inside, in case of blowout

power, (2) electricity—individual motor at each well, and (3) central power unit using "jerk" line connections, working on an eccentric and connected to as many as 10 or 12 wells at a time. Motivity is secured by natural gas.

Lloydminster, 30 miles to the east, has a similar product secured from about the same depth. A PETRECO unit has just been installed there also, which should noticeably increase development and production in that promising area.

PRINCESS

One of the most interesting events of the year has come from Princess, 120 miles east of Calgary.

Princess C.P.R. No. 8 well, now known as Princess C.P.R. 18–21–A well, at a depth of from 3,937 to 3,983 feet in the Devonian lime, has struck oil of a gravity reported at 35°, lubricating stock around 23%. Production from this well is very steady, currently at just over 180 barrels per day. This is a pioneer producer in the Devonian structure for the plains area, and may open a new and important chapter for prairie oil development.

CONRAD

The third largest oil producing area in 1944 outside of Turner Valley was Conrad. With the exception of Jumping Pound, Conrad is the latest arrival amongst Alberta's producing oil fields, the first production total coming in July, 1944. The two wells, Province 2 and Province 77-33-B, reached a production total for the year of 24,733 barrels.

Conrad adjoins Skiff, about 50 miles to the east of Lethbridge. The discovery was made in the basal Ellis sand at 3,050 feet, gravity of oil 25.4°. Drilling was carried out with a portable rotary. The newcomer is a most welcome addition, and future activities there will be regarded with interest.

RAM RIVER

Ram River, about 100 miles west of Red River, in the foothills, is nearing completion of its No. 3 well, which was reported on December 26th. to be at a depth of 5,181 in the Devonian limestone.

No. 1 was abandoned, having encountered a major fault. No. 2 proved to be only a small producer, resulting from too small a hole and being too low in the structure. No. 3, correcting these faults, has struck a major gas flow with good indications of oil. Drilling is being continued.

Gravity of oil taken from No. 2 well is reported at 41.5°. An analysis shows sulphur .136, natural gasoline 35% with residue of 65% containing lubricant and distillate stock. Success at No. 3 well may introduce a new and valuable field in the foothills area. Another important feature in Alberta's oil development during 1944 is the discovery of lubricant oil in the two fields of Ram River and Princess.

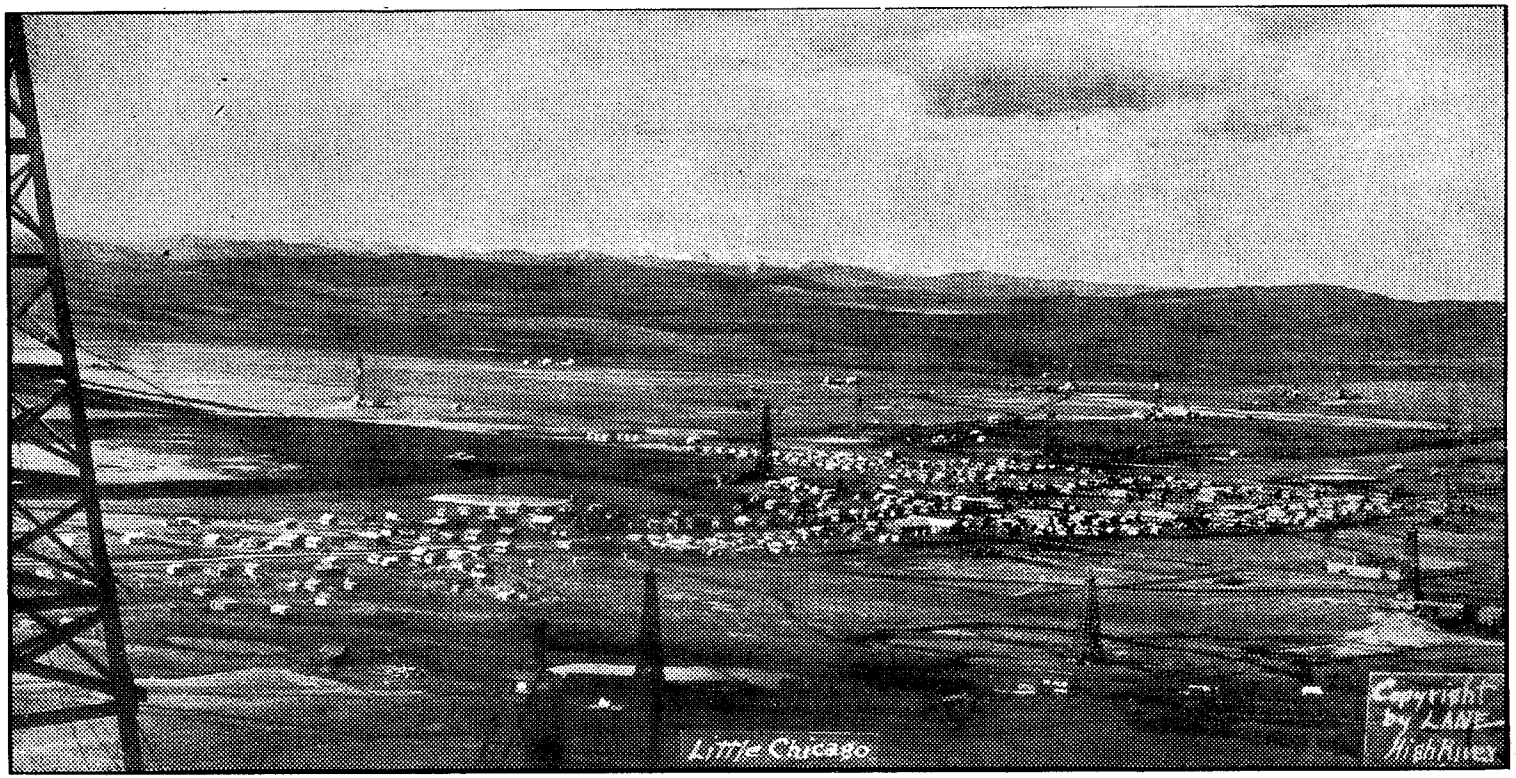


PHOTO BY LANE'S STUDIO, HIGH RIVER, ALTA.

Little Chicago, a townsite in Southern Turner Valley

BITUMINOUS SANDS DEVELOPMENT

An official announcement on December 8, 1944, was made by Premier E. C. Manning to the effect that the Government of Alberta had completed arrangements for the erection of an experimental pilot plant for the purpose of ascertaining the economic feasibilty of oil separation from the immense bituminous sands deposits along the Athabaska River Valley.

An expenditure of some $250,000 had been authorized for this purpose by the Legislature in the spring of 1944. The plant, it was stated, would be completed and in operation within a year.

A company—Oil Sands Limited—has entered into an agreement with the government to erect the plant, and provision has been made that the building and subsequent operation of same will be under the supervision of a three-man board, consisting of two Ministers of the Government and a representative of the Company.

Location of the plant is to be at Bitumount, 50 miles down the Athabaska River from McMurray. Resulting from research by Dr. K. A. Clarke, member of the Research Council of Alberta, indications point to production being more prolific in this part of the bituminous sands area than at any other. Softness of the outcrop eliminates the necessity of a diluent oil for separation processing. In addition to this the over-burden covering the sands at Bitumount is less heavy than at any other point in the area.

The Conservation Board, in dealing with bituminous sands development in its December report, states as follows:

"During the year a pilot plant at McMurray processed 5,684 tons of tar sands to recover 4,345 barrels of bitumen, all of which, together with stock from earlier operations, was refined."

NORTHWEST TERRITORIES

As a result of the intensive development of the Fort Norman oilfields in the Northwest Territories, now known as Norman Wells, the following interesting production development has taken place:

1941, 23,664 barrels; 1942, 75,789 barrels; 1943, 293,750 barrels; 1944, 964,300 barrels.

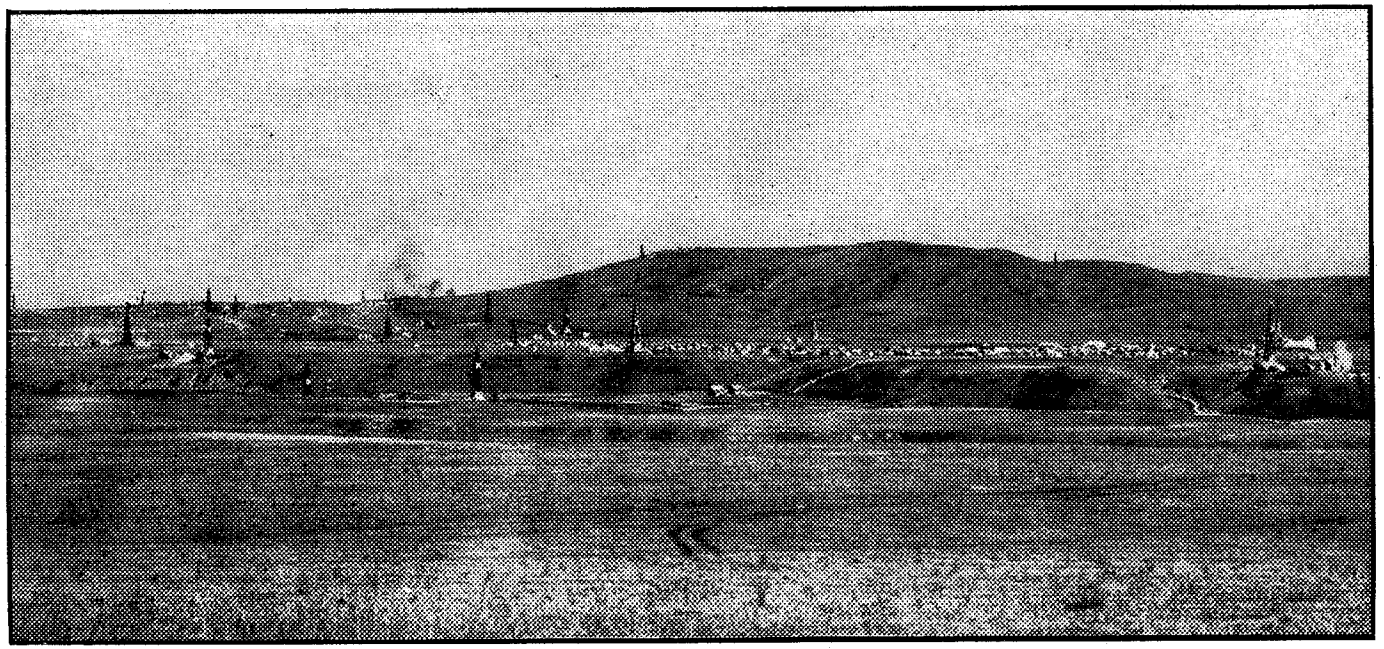
Production from Norman Wells has offset the Alberta decline of the last two years, increases from the former area making it possible for Canadian production totals over this period to remain more or less unchanged.

CANADIAN OIL PRODUCTION

(Quantities in Barrels)

	1943	1944	CHANGES
Alberta	9,674,548	8,788,726	— 885,822
Northwest Territories	293,750	964,300 (x)	+ 670,550 (x)
Ontario	130,377	132,800 (x)	+ 2,423 (x)
New Brunswick	24,530	22,000 (x)	— 2,530 (x)
TOTALS	10,123,205	9,907,826 (x)	— 215,379 (x)

(x) Preliminary Figure



Little New York, one of Turner Valley's townsites, situated a mile and a half south of Little Chicago

BRITISH EMPIRE STATEMENT

(Quantities in Barrels)

	1943	1944(x)	CHANGES (x)
Trinidad	25,000,000	22,000,000	−3,000,000
Canada	10,123,205	9,907,826	− 215,379
Bahrein Island	6,570,000	6,800,000	+ 230,000
Burma	913,000	915,000	+ 2,000
India	2,555,000	2,900,000	+ 345,000
Sarawak	.....	.....	.....
Brunei	.....	.....	.....
TOTAL BRITISH EMPIRE	45,161,205	42,522,826	−2,638,379

(x) Prelimary Figures.

The above insignificant annual totals for Burma are a long way from the eight million barrels total of 1941 and indicate how thoroughly the sabotage of the Allies was carried out. Canada assumed second place as an oil producer in the British Empire in 1939, and has held that position ever since. Within the last decade the Dominion has advanced in oil production from four to twenty-three per cent of the Empire's total.

The spectacular news of England's secret oil fields, in production throughout the war, was only made known to the world towards the close of 1944. Actual production figures by years are not yet available, which is the reason for their not being shown in the British Empire Statement. Nearly 250 producing wells were reported in December, 1944, with production climbing from 300 tons (2,100 barrels) a month in September, 1939, to 9,000 tons in 1943. Approximately 300,000 tons of crude has been produced during the war period, and production was stated late in 1944 to be running at the rate of 100,000 tons annually. Average well depths are from 2,000 to 2,500 feet, the oil coming from a series of sands in the Millstone Grits below the Coal Measures. Daily average output per well is 2–3 tons, some yielding as low as half a ton. The highest initial daily production is reported at 250 tons. As soon as drilling is completed all machinery is removed and agricultural activities continue undisturbed. The slogan is "milk and oil from the same field."

WORLD PRODUCTION

Another record in world production of oil was achieved in 1944 when the enormous total of 2,561,570,000 barrels was reported (preliminary figures), an increase of 249,829,000 over 1943. The United States contributed 196,824,000 to this increase, Latin America, 26,694,000, and Iran 22,620,000. The United States approximate total for 1944 was 1,700,000,000 barrels in comparison with 1943's total of 1,503,176,000, an increase of nearly two hundred million barrels.

The world produced an average in excess of 7,000,000 barrels of oil per day in 1944, of which less than 200,000 barrels daily reached enemy hands. On the assumption that Japan received half of this, there would have remained for the Reich oil supplies at the rate of only 40,000,000 barrels a year, and it took at the rate of 120,000,000 a year to move its war machine in 1939. Nor could the assistance of synthetic production in 1944 have proved of much value in the face of intensified aerial attacks made by the Allies on these plants. In any case, the synthetic total, which in the earlier stages of the war made enormous increases in Germany, plus production from German oil fields, added to all which the Nazis stole from

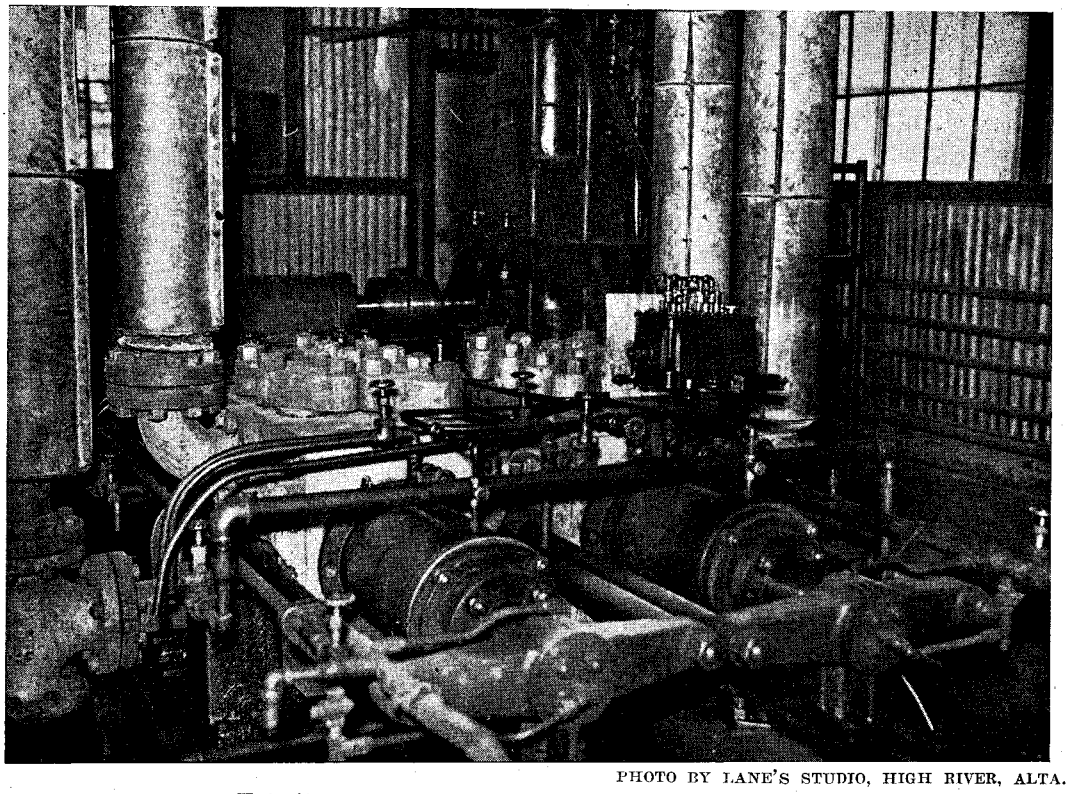
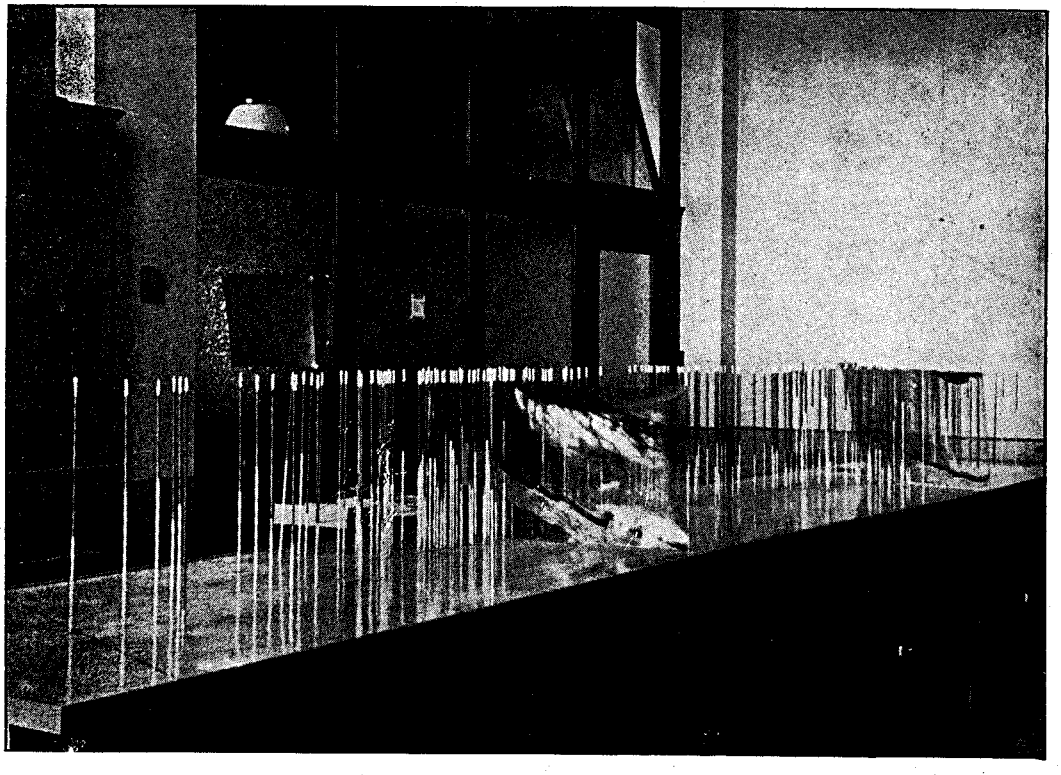


PHOTO BY LANE'S STUDIO, HIGH RIVER, ALTA.

Hot oil pumps, Gas and Oil Products Absorption Plant



Peg Model of Turner Valley field

the remainder of Europe, never at any time approached their consumption total. All of which points to the establishment of an immensity of pre-war reserves, which exceeded to an amazing degree all estimates made by pre-war experts.

CONCLUSION

The years 1943 and 1944 have shown decreases for oil production in Alberta, but 1944 has proved nevertheless to be a good year, the fruits of which may be realized in 1945.

Established fields outside of Turner Valley advanced considerably and new fields came into production. There should be a definite advance made in the Vermilion-Lloydminster area which invites the drilling of a great number of new wells, now that Lloydminster has erected a cleaning plant similar to the one in Vermilion. Princess is producing a valuable crude from the Devonian in the prairie zone and Conrad, a newcomer to the south, piled up a respectable total by the end of the year. Ram River may establish another field, whilst Jumping Pound, close to Calgary, came into production just as the year closed with the most spectacular news of 1944.

Added to this, Turner Valley, though on the decrease, should have new wells to draw from in the centre of the field west of the townsite, where much drilling is now in progress, and which should be completed by spring. The extreme north end is still encouraging in its performance, and no limit to that part of the field has appeared as yet.

It is interesting to note that the Turner Valley field in Alberta in 1944 in spite of its decline, contributed 94 per cent of Alberta's oil production total, 84 per cent of Canada's and 19 per cent of the British Empire's.

Increased production from the bituminous sands area may be recorded before the current year is out, and continued development of proven oil fields, together with exploratory work in new areas, will undoubtedly be carried out on a large scale.

There may be surprises ahead which would introduce an entirely new colouring into the 1945 picture of Alberta as oil province of Canada.

FOOTAGE OF WELLS DRILLED FOR OIL IN ALBERTA

Year	Turner Valley	Rest of Alberta	Totals
Prior to 1927	115,391	532,241	647,632
1927	53,340	31,626	84,966
1928	111,160	56,380	167,540
1929	240,020	130,577	370,597
1930	123,583	105,751	229,334
1931	61,939	54,613	116,552
1932	13,096	19,525	32,621
1933	51,806	20,043	71,849
1934	78,278	17,946	96,224
1935	27,462	33,011	60,473
1936	52,470	46,145	98,615
1937	245,531	46,423	291,954
1938	303,112	60,180	363,292
1939	281,274	93,013	374,287
1940	297,018	72,779	369,797
1941	377,860	113,410	491,270
1942	348,772	160,915	509,687
1943	244,535	243,399	487,934
1944	266,145	331,683	597,828
Totals	3,292,792	2,169,660	5,462,452

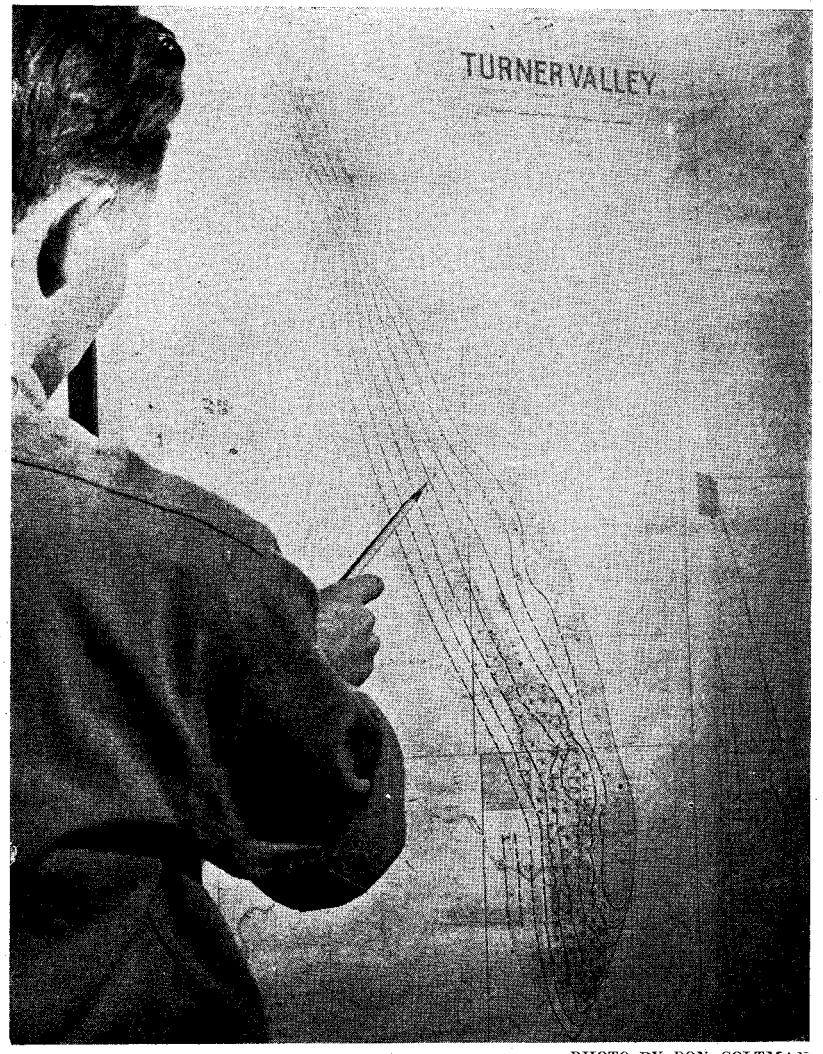


PHOTO BY DON COLTMAN

Map of Turner Valley

ALBERTA'S OIL-FIELDS

(As at December 31st, 1944)

FIELDS	Producing Wells	Daily Average Production (Barrels)	Wells Drilling	Producing Depths (Feet)	Gravity A.P.I.	Base	Outlet	Age of Field
TURNER VALLEY: **40 miles south of Calgary:**								
Limestone, crude	250	20,729	10	6,800–9,600	39°–48°	Intermediate	Canadian Prairies	8½ years
Limestone, distillate	23	78	Nil	3,700–6,800	55°–73°	"	"	20 "
Limestone, natural gasoline	.....	1,708	Nil	3,700–6,800	73°	"	"	20 "
Shallow crude	2	7	Nil	3,200–3,700	49°–50°	"	"	30 "
FIELDS OUTSIDE TURNER VALLEY:								
Del Bonita, Montana border	2	5	1	5,200	35°–37°	"	"	5 "
Taber, S.E. Alberta	11	497	1	3,200	18°–24°	"	"	6 "
Princess, S.E. Alberta	2	138	1	2,500–3,900	27°–34°	"	"	4 "
Conrad, S.E. Alberta	2	203	1	3,100	25°	"	"	6 months
Wainwright, 150 miles east of Edmonton	7	42	Nil	2,200	18°	Hybrid	Local	19 years
Vermilion, 150 miles east of Edmonton	44	646	1	1,800	14°	Naphthenic	C.N.R., Mtn. Div.	5 "
Lloydminster, east of Edmonton, (Saskatchewan border)	4	15	1	1,900	14°	"	"	5 "
MISCELLANEOUS: (Intermittent production only)								
Dina, Saskatchewan border	.....	.....	....	1,700	14°	"	Local	9 "
Moose Dome, 30 miles west of Calgary	.....	.....	1	1,600	48°	Intermediate	Canadian Prairies	7 "
Tilley, S.E. Alberta	.....	.....	....	3,200	18°	"	"	3 "

ALBERTA CUMULATIVE OIL PRODUCTION TABLE BY CALENDAR YEARS

(Quantities in Barrels of 35 Imperial Gallons)

Calendar Years	Turner Valley										Fields Outside Turner Valley					
	Limestone						Crude Oil Recovered from above the Limestone		Turner Valley Totals		Taber		Vermilion		Wainwright	
	Oil Wells		Gas Wells		Natural Gasoline						Heavy Crude		Heavy Crude		Heavy Crude	
1914–21	.....	.....	.....	.....	76	**76**	56,599	**56,599**	56,675	***56,675**	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	9,237	**9,313**	6,559	**63,158**	15,796	**72,471**	.....	.....	.....	.....	.....	.....
1923	.....	.....	.....	.....	8,060	**17,373**	1,943	**65,101**	10,003	**82,474**	.....	.....	.....	.....	.....	.....
1924	.....	.....	1,689	**1,689**	13,128	**30,501**	2,932	**68,033**	17,749	**100,223**	.....	.....	.....	.....	.....	.....
1925	.....	.....	169,008	**170,697**	8,951	**39,452**	2,926	**70,959**	180,885	**281,108**	.....	.....	.....	.....	.....	.....
1926	.....	.....	203,725	**374,422**	7,283	**46,735**	2,609	**73,568**	213,617	**494,725**	.....	.....	.....	.....	5,981	**5,981**
1927	.....	.....	284,595	**659,017**	5,854	**52,589**	38,808	**112,376**	329,257	**823,982**	.....	.....	.....	.....	2,526	**8,507**
1928	.....	.....	410,448	**1,069,465**	.....	**52,589**	70,910	**183,286**	481,358	**1,305,340**	.....	.....	.....	.....	7,952	**16,459**
1929	.....	.....	908,411	**1,977,876**	.....	**52,589**	73,181	**256,467**	981,592	**2,286,932**	.....	.....	.....	.....	12,332	**28,791**
1930	40,900	**40,900**	1,275,202	**3,253,078**	.....	**52,589**	50,897	**307,364**	1,366,999	**3,653,931**	.....	.....	.....	.....	9,739	**38,530**
1931	63,969	**104,869**	1,281,341	**4,534,419**	.....	**52,589**	26,936	**334,300**	1,372,246	**5,026,177**	.....	.....	.....	.....	7,142	**45,672**
1932	52,409	**157,278**	802,108	**5,336,527**	.....	**52,589**	21,757	**356,057**	876,274	**5,902,451**	.....	.....	.....	.....	7,003	**52,675**
1933	49,601	**206,879**	717,154	**6,053,681**	185,781	**238,370**	23,915	**379,972**	976,451	**6,878,902**	.....	.....	.....	.....	5,276	**57,951**
1934	61,249	**268,128**	734,891	**6,788,572**	414,324	**652,694**	22,307	**402,279**	1,232,771	**8,111,673**	.....	.....	.....	.....	11,779	**69,730**
1935	61,302	**329,430**	650,149	**7,438,721**	496,681	**1,149,375**	18,903	**421,182**	1,227,035	**9,338,708**	.....	.....	.....	.....	14,638	**84,368**
1936	220,552	**549,982**	451,396	**7,890,117**	602,360	**1,751,735**	13,011	**434,193**	1,287,319	**10,626,027**	.....	.....	.....	.....	15,057	**99,425**
1937	1,787,421	**2,337,403**	311,549	**8,201,666**	657,169	**2,408,904**	10,589	**444,782**	2,766,728	**13,392,755**	600	**600**	.....	.....	13,459	**112,884**
1938	5,999,970	**8,337,373**	150,542	**8,352,208**	531,434	**2,940,338**	9,192	**453,974**	6,691,138	**20,083,893**	15,098	**15,698**	.....	.....	12,985	**125,869**
1939	7,162,962	**15,500,335**	88,101	**8,440,309**	296,787	**3,237,125**	8,431	**462,405**	7,556,281	**27,640,174**	3,720	**19,418**	202	**202**	11,624	**137,493**
1940	8,097,414	**23,597,749**	75,602	**8,515,911**	274,172	**3,511,297**	7,309	**469,714**	8,454,497	**36,094,671**	.....	**19,418**	10,817	**11,019**	7,527	**145,020**
1941	9,443,143	**33,040,892**	88,064	**8,603,975**	293,122	**3,804,419**	6,014	**475,728**	9,830,343	**45,925,014**	5,600	**25,018**	22,051	**33,070**	11,733	**156,753**
1942	9,621,326	**42,662,218**	74,587	**8,678,562**	302,216	**4,106,635**	5,806	**481,534**	10,003,935	**55,928,949**	29,819	**54,837**	56,819	**89,889**	14,510	**171,263**
1943	8,940,198	**51,602,416**	46,465	**8,725,027**	461,169	**4,567,804**	4,865	**486,399**	9,452,697	**65,381,646**	88,735	**143,572**	93,258	**183,147**	18,136	**189,399**
1944	7,837,492	**59,439,908**	37,427	**8,762,454**	448,186	**5,015,990**	3,209	**489,608**	8,326,314	**73,707,960**	148,638	**292,210**	234,603	**417,750**	17,154	**206,553**

CUMULATIVE PRODUCTION TABLE—(Continued)

Calendar Years	FIELDS OUTSIDE TURNER VALLEY															
	RED COULEE Light Crude		PRINCESS Heavy Crude		TILLEY Heavy Crude		DINA Heavy Crude		DEL BONITA Heavy Crude		SKIFF Light Crude		LLOYD-MINSTER Heavy Crude		MOOSE DOME Light Crude	
1914–21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1922	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1923	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1924	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1925	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1926	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1927	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	529	**529**	.....	.....	.....	.....
1928	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	222	**751**	.....	.....	.....	.....
1929	1,328	**1,328**	.....	.....	.....	.....	2,839	**2,839**	.....	.....	1,432	**2,183**	.....	.....	.....	.....
1930	53,917	**55,245**	.....	.....	.....	.....	1,873	**4,712**	.....	.....	3,731	**5,914**	.....	.....	.....	.....
1931	65,066	**120,311**	.....	.....	.....	.....	10,362	**15,074**	.....	.....	.....	**5,914**	.....	.....	.....	.....
1932	34,315	**154,626**	.....	.....	.....	.....	.....	**15,074**	562	**562**	.....	**5,914**	.....	.....	.....	.....
1933	29,708	**184,334**	.....	.....	.....	.....	.....	**15,074**	546	**1,108**	.....	**5,914**	.....	.....	.....	.....
1934	20,276	**204,610**	.....	.....	.....	.....	.....	**15,074**	561	**1,669**	510	**6,424**	.....	.....	.....	.....
1935	20,536	**225,146**	.....	.....	.....	.....	.....	**15,074**	195	**1,864**	1,564	**7,988**	.....	.....	.....	.....
1936	16,262	**241,408**	.....	.....	.....	.....	.....	**15,074**	1,480	**3,344**	310	**8,298**	.....	.....	.....	.....
1937	13,790	**255,198**	.....	.....	.....	.....	1,642	**16,716**	.....	**3,344**	.....	**8,298**	.....	.....	655	**655**
1938	13,818	**269,016**	.....	.....	.....	.....	6,383	**23,099**	615	**3,959**	.....	**8,298**	.....	.....	3,064	**3,719**
1939	13,022	**282,038**	515	**515**	.....	.....	3,633	**26,732**	2,073	**6,032**	.....	**8,298**	348	**348**	2,074	**5,793**
1940	12,177	**294,215**	.....	**515**	.....	.....	4,746	**31,478**	3,444	**9,476**	.....	**8,298**	1,648	**1,996**	351	**6,144**
1941	11,626	**305,841**	19,587	**20,102**	.....	.....	2,894	**34,372**	4,393	**13,869**	.....	**8,298**	416	**2,412**	.....	**6,144**
1942	10,107	**315,948**	10,478	**30,580**	5,718	**5,718**	2,780	**37,152**	1,653	**15,522**	.....	**8,298**	477	**2,889**	.....	**6,144**
1943	8,928	**324,876**	340	**30,920**	5,065	**10,783**	200	**37,352**	1,882	**17,404**	.....	**8,298**	2,640	**5,529**	2,205	**8,349**
1944	3,835	**328,711**	13,815	**44,735**	3,137	**13,920**	.....	**37,352**	9,366	**26,770**	.....	**8,298**	6,296	**11,825**	628	**8,977**

CUMULATIVE PRODUCTION TABLE—(Continued)

Calendar Years	FIELDS OUTSIDE TURNER VALLEY												† VALUATIONS	
	KEHO Light Crude		ARMELGRA Heavy Crude		RAM RIVER Light Crude		CONRAD Heavy Crude		TOTALS of Fields Outside Turner Valley		ALBERTA TOTALS			
1914–21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56,675	**56,675**	$ 218,200	**$ 218,200**
1922	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,796	**72,471**	64,047	**282,247**
1923	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,003	**82,474**	41,333	**323,580**
1924	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17,749	**100,223**	88,095	**411,675**
1925	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	180,885	**281,108**	717,271	**1,128,946**
1926	.....	.....	.....	.....	.....	.....	.....	.....	5,981	**5,981**	219,598	**500,706**	914,707	**2,043,653**
1927	.....	.....	.....	.....	.....	.....	.....	.....	3,055	**9,036**	332,312	**833,018**	1,529,477	**3,573,130**
1928	.....	.....	.....	.....	.....	.....	.....	.....	8,174	**17,210**	489,532	**1,322,550**	1,727,824	**5,300,954**
1929	.....	.....	.....	.....	.....	.....	.....	.....	17,931	**35,141**	999,523	**2,322,073**	3,424,021	**8,724,975**
1930	.....	.....	.....	.....	.....	.....	.....	.....	69,260	**104,401**	1,436,259	**3,758,332**	4,557,473	**13,282,448**
1931	.....	.....	.....	.....	.....	.....	.....	.....	82,570	**186,971**	1,454,816	**5,213,148**	3,977,788	**17,260,236**
1932	.....	.....	.....	.....	.....	.....	.....	.....	41,880	**228,851**	918,154	**6,131,302**	2,606,907	**19,867,143**
1933	803	**803**	.....	.....	.....	.....	.....	.....	36,333	**265,184**	1,012,784	**7,144,086**	2,694,310	**22,561,453**
1934	152	**955**	.....	.....	.....	.....	.....	.....	33,278	**298,462**	1,266,049	**8,410,135**	3,031,446	**25,592,899**
1935	.....	**955**	.....	.....	.....	.....	.....	.....	36,933	**335,395**	1,263,968	**9,674,103**	2,856,029	**28,448,928**
1936	.....	**955**	.....	.....	.....	.....	.....	.....	33,109	**368,504**	1,320,428	**10,994,531**	2,918,730	**31,367,658**
1937	.....	**955**	.....	.....	.....	.....	.....	.....	30,146	**398,650**	2,796,874	**13,791,405**	4,913,960	**36,281,618**
1938	.....	**955**	.....	.....	.....	.....	.....	.....	51,963	**450,613**	6,743,101	**20,534,506**	8,639,488	**44,921,106**
1939	.....	**955**	.....	.....	.....	.....	.....	.....	37,211	**487,824**	7,593,492	**28,127,998**	9,289,580	**54,210,686**
1940	.....	**955**	.....	.....	.....	.....	.....	.....	40,710	**528,534**	8,495,207	**36,623,205**	10,503,249	**64,713,935**
1941	.....	**955**	.....	.....	.....	.....	.....	.....	78,300	**606,834**	9,908,643	**46,531,848**	13,809,708	**78,523,643**
1942	.....	**955**	.....	.....	.....	.....	.....	.....	132,361	**739,195**	†10,136,296	**56,668,144**	15,517,266	**94,040,909**
1943	.....	**955**	462	**462**	.....	.....	.....	.....	221,851	**961,046**	9,674,548	**66,342,692**	15,724,518	**109,765,427**
1944	.....	**955**	.....	**462**	207	**207**	24,733	**24,733**	462,412	**1,423,458**	8,788,726	**75,131,418**	14,468,061	**124,233,488**

NOTE:— The cumulative Alberta oil production tables, appearing in the previous three pages, contain revisions based for the most part on additional data now received. The most noticeable change is created by Royalite 4.

Figures in light faced type represent annual totals, and in black faced type the cumulative totals up to the end of the calendar year shown in the column in which they appear.

Changes in the classification of wells have been made on the basis of gas/oil ratio—30 Mcf/bbl—which is the dividing line between oil wells and gas wells. Earlier tabulation also listed production from Royalite 1 and 3 with gas wells on basis of gravity. This production is now transferred to shallow horizon recoveries above the limestone.

From 1921 to 1927, natural gasoline was derived from horizons above the limestone; from 1933 onward, from the limestone.

* Estimated. Production from 1914 to 1921 cannot be substantiated in detail, and is probably a minimum figure. Southern Alberta 1, later completed as Dalhousie 1, was the largest producer.

† Valuations. Value of sales by primary producers have been revised after receiving considerable additional information on the years 1923 to 1930. They must still, however, be considered as only rough estimates for early years, although they no doubt represent the probable value of oil produced at that time. During later years, actual sales of oil by primary producers are shown.

‡ Net production total after deducting storage loss of 6,974 barrels.

PETROLEUM PRODUCTION IN THE BRITISH EMPIRE, 1932 TO 1944, INCLUSIVE

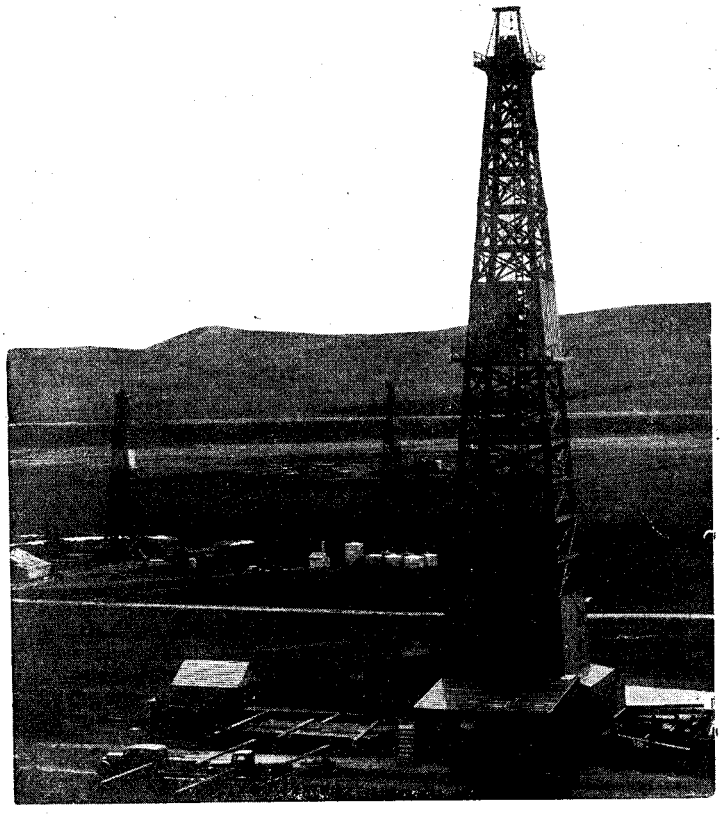
Country	1932		1933		1934		1935		1936		1937	
	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.
Trinidad	10,126,121	43.1	9,561,353	41.2	10,894,363	41.2	11,671.224	40.7	13,237,030	39.2	15,502,989	36.8
Canada	1,044,412	4.4	1,145,333	4.8	1,401,895	5.3	1,447,204	5.0	1,504,287	4.5	2,943,750	7.1
Bahrein Island	902	.....	31,377	0.1	185,072	1.1	1,264,807	4.4	4,644,735	13.7	7,762,264	18.4
Burma	7,073,437	30.1	7,114,311	30.0	7,278,859	27.5	7,181,113	25.1	7,587,718	22.5	7,847,553	18.5
Brunei	1,200,026	5.1	2,035,656	8.6	2,705,350	10.2	2,037,810	7.1	1,978,329	5.8	2,161.653	4.9
India	1,743,878	7.4	1,628,803	6.9	1,921,863	7.3	3,302,905	11.5	3,296,938	9.7	4,397,038	10.5
Sarawak	2,329,733	9.9	2,206,815	9.3	1,942,591	7.4	1,776,593	6.2	1,547,882	4.6	1,655,565	3.8
Total British Empire	23,518,509	100.0	23,723,648	100.0	26,429,993	100.0	28,681,656	100.0	33,796,819	100.0	42,270,812	100.0
World Total	1,306,714,101	.....	1,438,767,449	.....	1,517,121,671	.....	1,651,993,118	.....	1,797,993,578	.....	2,046,650,389	.....
Per cent. British Empire of World	.....	1.80	.....	1.65	.....	1.74	.....	1.74	.....	1.88	.....	2.06

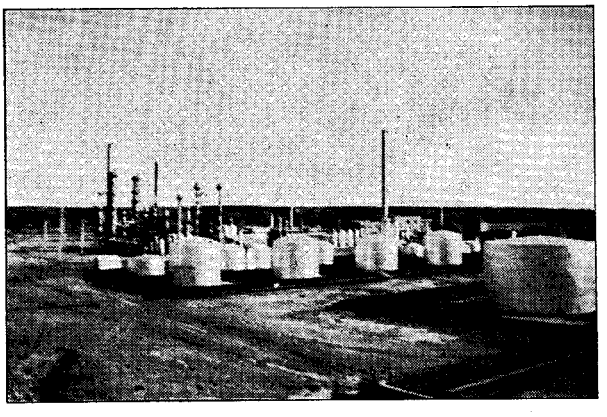
PETROLEUM PRODUCTION IN THE BRITISH EMPIRE—(Continued)

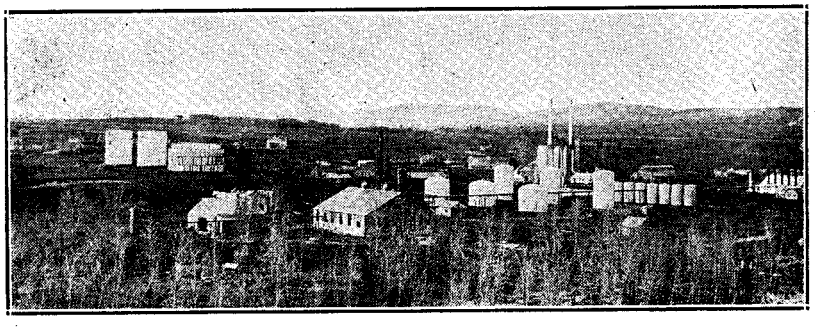
Country	1938		1939		1940		1941		1942		1943		1944	
	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.	Barrels	Per Cent.
Trinidad	17,737,060	35.5	19.270,000	37.7	20,300,000	38.2	21,150,000	38.5	21,500,000	48.8	25,000,000	55.4	22,000,000	51.8
Canada	6,956,811	14.0	7,843,780	15.2	8,723,982	16.5	10,123,904	18.4	10,384,019	23.6	10,123,205	22.5	9,907,826	23.4(x)
Bahrein Island	8,298,000	16.7	7,588,560	14.8	7,200,000	13.5	7,070,000	12.9	7,250,000	16.4	6,570,000	14.5	6,800,000	15.9
Burma	7,499,500	15.0	7,396,000	14.4	7,750,000	14.6	7,900,000	14.3	2,500,000	5.6	913,000	2.0	915,000	2.1
Brunei	2,330,200	4.7	2,164,000	4.2	5,742,000	10.7	5,245,000	9.6	.....	.....	.....	.....	.....	.....
India	5,387,210	10.8	5,755,000	11.1	2,150,000	4.1	2,245,000	4.0	2,500,000	5.6	2,555,000	5.6	2,900,000	6.8
Sarawak	1,624,880	3.3	1,327,000	2.6	1,321,000	2.4	1,275,000	2.3	.....	.....	.....	.....	.....	.....
Total British Empire	49,833,661	100.0	51,344.340	100.0	53,186,982	100.0	55,008,904	100.0	44,134,019	100.0	45,161,205	100.0	42,522,826	100.0
World Total	1,979,268,510	.....	2,068,667,520	.....	2,158,123,000	.....	2,227,125,000	.....	2,050,951,000	.....	2,311,741,000	.....	2,561,570,000	.....
Per cent. British Empire of World	.....	2.51	.....	2.48	.....	2.46	.....	2.46	.....	2.15	.....	1.95	.....	1.66

(x) Of the Canada total for 1944—9,907,826 barrels—8,788,726 or 88.70 per cent—were produced in Alberta.

NOTE:— Towards the close of 1944, it was learned for the first time that England had been producing oil since 1939. Locality of the fields has been kept secret until now. English annual oil production figures are not, however, shown in the above tables, this detailed information not yet being available.







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